REMARKS

The Claims

Claims 1-34 are pending in this application. Claims 2, 9, 14, 16, 27, 29, 32, and 34 are currently amended. No new matter has been introduced into this application by reason of the amendments to the claims.

35 USC 103(a): Claims 1, 17, and 26

The Examiner rejected Claims 1, 17, and 26 under 35 USC 103(a) as being unpatentable over US 6,431,128 (Dabadie) or US 6,386,154 (Hellman et al.) in view of US 4,787,343 (Tuckey). In explaining the rejection the Examiner stated:

> Both Dabadie (figure 2) and Hellman et al. (figures 2-4) show sequentially delivering exhaust from one cylinder to the next. However, the exhaust is not mixed with fuel. Tuckey discloses using exhaust delivered from one cylinder to another via a tube with a fuel injector 50 so as to achieve more complete combustion. It would have been obvious to one of ordinary skill in the art to place fuel injectors of the primary references in the exhaust transfer lines so as to achieve more complete combustion as taught by Tuckey. In regard to claim 17, to use the exhaust transfer/fuel injector system in any engine, including an axial one, so as to achieve more complete combustion would have been obvious to one of ordinary skill in the art.

Dabadie describes a system for transferring the **exhaust gas** from a cylinder during its **exhaust stroke** to another cylinder on that cylinder's intake stroke, in a four-stroke engine. Hellman describes a system that is similar to Dabadie. In the Hellman system, **exhaust gas** transfer occurs on the **exhaust stroke** in a four-stroke cycle, meaning there would only be limited transfer of heat and pressure. Additionally, the Hellman system uses heat exchangers to **reduce** the temperature of the exhaust gas as it is transferred to the inlet of another cylinder.

The Applicant's claimed motor as set forth in Claim 1 of the present application is configured such that combustion in a cylinder creates a combusted mixture **having a combustion pressure, which combustion pressure forces some of the combusted mixture to at least partly mix with fuel for the next cylinder in the firing order to improve the**

combustion properties of the fuel, and to deliver a mixture of the combusted mixture and fuel under elevated temperature and pressure into the next cylinder in the firing order.

The documents cited by the Examiner, whether considered alone or in combination, do not teach the claimed features. The Examiner considers that inserting a fuel injector into one of the exhaust transfer passages of Hellman or Dabadie would result in the claimed features. However, the mere inserting of fuel injectors into the exhaust transfer lines of Hellman or Dabadie would not result in the Applicant's claimed motor, because the systems of Dabadie and Hellman do not transfer exhaust gas using combustion pressure as set forth for the Applicant's claimed motor.

Both of the primary references, Hellman and Dabadie, transfer exhaust in engines with four-stroke cycles. A four-stroke cycle has an intake stroke, a compression stroke, a combustion (power) stroke, and an exhaust stroke. The transfer in the Dabadie and Hellman references occurs on the **exhaust stroke**, which is a low power stroke. The motors described in Dabadie and Hellman are not configured such that the transfer of combusted gas occurs during the combustion stroke. In the Applicant's claimed motor as set forth in Claim 1, it is the combustion pressure that forces some of the combusted mixture to at least partly mix with fuel for the next cylinder in the firing order. In the Hellman and Dabadie references, the transfer would be at low temperature and pressure compared to the system of the present invention, which operates under 'combustion pressure' and pre-exhaust. Additionally, the system of Hellman uses heat exchangers to reduce the temperature of the exhaust gas that is transferred. In the Applicant's claimed motor, benefit is gained from the elevated temperature and pressure of the transferred combusted mixture. The elevated temperature and pressure assist with atomizing fuel and retarding detonation.

Tuckey describes a combustion enhancer for an internal combustion engine. In each of the embodiments shown, only pairs of cylinders are interconnected via passages. For example, in Figures 1 and 4 which show two cylinder engines, passages 42, 43, or 112 interconnect the

cylinders. Two passages are used in Figure 1, and a single passage is used in Figure 4. Figure 3 shows a four cylinder engine, but again the cylinders are only connected in pairs. In particular, cylinders 2 and 3 are interconnected via passages 84.

The Applicant's claimed method as set forth in Claim 26 includes the step of "... delivering a combusted mixture under combustion pressure and temperature from the cylinder which has just fired to at least partly mix with fuel for the next cylinder in the firing order to improve the combustion properties of the fuel, and delivering a mixture of the combusted mixture and fuel under elevated temperature and pressure into the next cylinder in the firing order."

For the same reasons as outlined above, it is submitted that the documents cited by the Examiner do not teach the combination of features of the Applicant's claimed method as set forth in Claim 26. More specifically, there is no teaching of an engine having three or more cylinders arranged to fire with a firing order, nor is there any teaching of the claimed delivery of a combusted mixture under combustion pressure and temperature sequentially in the cylinder firing order of the motor.

Claim 17 depends from Claim 1 and thus, includes all of the features set forth in Claim 1. Therefore, Claim 17 is allowable over the cited references for at least the same reasons as Claim 1.

The rejection of Claims 1, 17, and 26 should be withdrawn because the rejection is not supported by substantial evidence.

CONCLUSION

In view for the foregoing amendments and remarks, it is believed that the claims currently pending in this application are in condition for allowance. The Applicant respectfully requests that the Examiner reconsider the application in the light of the amendments and remarks presented herein.

Respectfully submitted,

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